

REMARKS/ARGUMENTS

This is responsive to the Office Action dated April 18, 2006. This Response is accompanied by a request for a two-month extension of time. Accordingly, it is respectfully submits that this response is timely timed.

In the Office Action, the Examiner rejected claim 11 under 35 USC 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the application regards as the invention. In particular, the Examiner stated that the concept "the accumulators and fluid driven motor are integrated into a single housing" is not found in the drawings. By this Response, the applicant has amended claim 11 to delete the requirement of a single housing.

The Examiner also rejected claims 18-20 under 35 USC 112, second paragraph. The Examiner stated that the structures of the reservoirs are not clearly defined. The Examiner queried whether the reservoir is different from the pump chamber. By this Response, the applicant has amended each of claims 18-20. In particular, the applicant has specified that the path through which the fluid travels includes a reservoir and the hydraulic pump. As shown in Figure 1, the path may include two reservoirs or accumulators 25, 29. Accordingly, the applicant respectfully submits that claims 18-20 distinctly claim the subject matter which the applicant regards as the invention.

The Examiner rejected claims 1-3, 5 and 7-17 under 35 USC 102(b) as being anticipated by Otters. The Examiner stated that Otters discloses a Stirling engine comprising a heater and a cooler each having louver fins, a hydraulic pump having a pump piston 80 with tangential inlet and outlet 84, 90, for pumping fluid. The function of piston pump 80 is set out at column 8, line 65-column 9, line 18 of Otters. As setout therein, piston pump 80 is afixed on work piston linkage rod 60c of the work piston 36

and reciprocates within chamber 82. Piston pump 80 is used as part of a pneumatic control system to control the flow of fluid between buffer spaces 72 and 76. As stated in Otters, "Provisions of such buffer space not only eliminates or greatly diminishes the usual problem of sealing two gases against each other, such as highly pressurized hydrogen working gas v. atmospheric air, but also provides a reservoir for containing working gas leaking out of the displacer chamber 24, and which can then be repressurized for use in the pneumatic control system or returned to the displacer chamber 24."

In contrast, the instant invention relates to a heat engine which produces hydraulic output. For example, in operation, the heat engine is connected to the flow circuit region within which a working fluid travels. As exemplified in the embodiment of Figure 1, the movement of displacer 19 downwardly exerts pressure on hydraulic fluid 40 in chamber 34 thereby causing hydraulic fluid to flow through pipe 38 to motor 27 wherein useful work is produced by the flow of hydraulic fluid therethrough. Hydraulic fluid is then returned to chamber 34. Accordingly, the heat engine can perform work on a member external to the heat engine by causing a fluid to flow through a conduit and perform work as the fluid flows through the conduit. For example, the fluid may pass through a fluid driven pump thereby causing the pump to perform work.

Claim 1 as examined specified that the heat engine included an output system which included a chamber having a liquid inlet and a liquid outlet. The device of Otters does not include such an output system. In particular, piston pump 80 is part of a pneumatic control system but does not produce power which is available external to the heat engine. Accordingly, the applicant respectfully submits that Otters et al does not include an output system having claimed features.

By this Response, the applicant has clarified claim 1. In particular, the applicant has specified that the liquid inlet to the chamber is connectable to a first

conduit and the liquid outlet from the chamber is connectable to a second conduit whereby, in use, the first and second conduits define a circuit for a liquid to flow through and that the liquid performs work on a member external to the heat engine as the fluid flows through the circuit.

Accordingly, the applicant respectfully submits that Otters et al does not anticipate claim 1 as originally on file or as amended hereby as it does not disclose the use of an output system as defined.

The applicant has made consequential changes to claims 9 and 14. In particular, claims 9 and 14 introduced the feature of a circuit. Claims 9 and 14 have been amended to be consistent with amended claim 1.

The applicant has also cancelled claims 8, 16 and 17. In particular, the applicant has cancelled claims 16 and 17 without prejudice to be filing a divisional application to seek protection for those features of the invention.

The applicant has also introduced new claim 21 wherein the applicant specifies that the circuit includes a fluid driven motor.

The Examiner also rejected claims 18-20 as being anticipated by Fischer. Each of claims 18-20 claim a hydraulic pump in fluid flow communication with a heat engine wherein the hydraulic pump is driven by the periodic pulses produced by the heat engine. The Examiner stated that Fischer discloses a Stirling engine comprising a hydraulic pump chamber 15. Hydraulic pump chamber 15 comprises part of the heat engine itself. Piston 13 is provided in chamber 15. However, Fischer does not disclose both a heat engine and a hydraulic pump. Effectively in Fischer, the "hydraulic pump" referred to by the Examiner comprises the mechanism which drives fluid to flow between different reservoirs and is therefore part of the heat engine. In contrast, claim

18, 19, and 20 each specify that the heat engine drives a hydraulic pump. Fischer does not disclose a system whereby the operation of the heat engine (for example piston 13 in the case of Fischer) causes a fluid to provide power to a hydraulic pump. Accordingly, the applicant respectfully submits that claims 18-20 are not anticipated by Fischer.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

BERESKIN & PARR

By 

Philip C. Mendes da Costa
Reg. No. 33,106
Tel: 416-957-1695